



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,883	01/29/2004	Hironori Yasukawa	500.43450X00	2307
24956	7590	01/24/2006	EXAMINER	
MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			SAVLA, ARPAN P	
			ART UNIT	PAPER NUMBER
			2185	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/765,883	YASUKAWA ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Arpan P. Savla	2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 29 January 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-7 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 29 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/29/04 &amp; 6/14/05</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### **Response to Returned Office Action**

A first action non-final for Application No. 10/765883 that was mailed on November 30, 2005 was returned to the Office on December 1, 2005 as undelivered. As stated in MPEP § 707.13 Examiner is informing Applicant of the returned action and also acknowledging that the period for reply has been restarted to begin from the mailing date of the instant office action.

The instant application having Application No. 10/765883 has a total of 7 claims pending in the application, there are 3 independent claims and 4 dependent claims, all of which are ready for examination by the examiner.

### **INFORMATION CONCERNING OATH/DECLARATION**

#### **Oath/Declaration**

1. Applicant's oath/declaration has been reviewed by Examiner and is found to conform to the requirements prescribed in 37 CFR 1.63.

### **STATUS OF CLAIM FOR PRIORITY IN THE APPLICATION**

2. As required by MPEP § 201.14(c), acknowledgment is made of Applicant's claim for priority based on an application filed in the Japanese Patent Office on November 28, 2003.

**INFORMATION CONCERNING DRAWINGS**

**Drawings**

3. Applicant's drawings submitted are acceptable for examination purposes.

**ACKNOWLEDGMENT OF REFERENCES CITED BY APPLICANT**

**Information Disclosure Statement**

4. As required by MPEP § 609(c), Applicant's submission of the Information Disclosure Statements dated January 29, 2004 and June 14, 2005 are acknowledged by Examiner and cited references have been considered in the examination of the claims now pending. As required by MPEP § 609 c(2), a copy of the PTOL-1449 initialed and dated by Examiner is attached to the instant office action.

**OBJECTIONS**

**Specification**

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "System And Method For A Storage Control Apparatus Using Information On Management Of Storage Resources".

**Claims**

6. Claims 1, 3-4, and 6-7 are objected to because of the following informalities:

Art Unit: 2185

7. As per claims 1, 4, and 7, the phrase “data control I/O unit” in claims 1 and 4 and the phrases “channel control unit” and “disk control unit” in claim 7 are inconsistent with the specification. Examiner believes that said phrases refer to “data control I/O section”, “channel control section”, and “disk control section” respectively from the specification. Applicant must be consistent throughout both the specification and claims and choose either “section” or “unit” to describe the claimed inventions.

8. As per claims 3 and 6, the phrase “an RAID” in line 3 of claim 3 and line 4 of claim 6 should read “a RAID”.

9. Also for claim 3, the phrase “include of a” in line 2 should read “include a”.

10. As per claim 4, on line 11 there should be a semicolon after the word “request”. Examiner also suggests that line 12 and 14 of claim 4 be indented to clearly signify new limitations within the claim.

Appropriate corrections are required.

## REJECTIONS NOT BASED ON PRIOR ART

### Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1, 4, and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “can be communicatively connected” in line 3 of claims 1, 4, and 7 does not clearly identify if the

"plurality of communication ports" are actually communicatively connected to the "plurality of information processing apparatuses" or not.

## **REJECTIONS BASED ON PRIOR ART**

### **Claim Rejections - 35 USC § 103**

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. **Claims 1-7 are rejected under 35 U.S.C. 103(a) as being obvious over Blumenau et al. (U.S. Patent 6,260,120) in view of Voigt et al. (U.S. Patent 5,960,451).**

15. **As per claim 1,** Blumenau discloses a storage control apparatus comprising:  
a data I/O control unit which has a plurality of communication ports that can be communicatively connected with any of a plurality of information processing apparatuses (col. 8, lines 24-28, 36-37, and 40-41; col. 9, lines 50-57; Fig. 1, elements 20, 21, 22-25, 27, and 35-36; and Fig. 2, elements 41-44), is communicatively connected to a plurality of physical disk drives for storing data (col. 8, lines 24-35, 36-37, and 41-44; and Fig. 1, elements 20, 26, 28-31, and 37-38), receives a data I/O request for data stored in the physical disk drives from the information processing apparatuses via the communication ports (col. 8, lines 48-49), and performs data read/write from/to the physical disk drives in accordance with the received data I/O

request (col. 8, lines 56-60); It should be noted that “cached storage subsystem” is analogous to “storage control apparatus”, “storage controller” is analogous to “data I/O control unit”, and “hosts” are analogous to “information processing apparatuses”.

a first memory storing a data which is read/written among the data stored in the physical disk drives (col. 8, lines 36-37, 48-54, and 60-65; and Fig. 1, element 32); and

a second memory storing information on management of storage resources including the communication ports and the physical disk drives (col. 27, lines 23-33 and Fig. 25, element 282); It should be noted that “virtual ports” are analogous to “communication ports”. It should also be noted that the logical storage volumes directly correspond to the storage devices (i.e. physical disk drives), see col. 8, lines 28-29.

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface, an identifier of the communication port and an identifier of the physical disk drive are transmitted to said user interface (col. 30, line 59 – col. 31, line 2 and Fig. 30, elements 346 and 347). It should be noted that “clicking on it with a pointing device” is analogous to “transmission request” and “system administrator” is analogous to “user”. Also, see citation note directly above regarding logical storage volumes.

Blumenau does not disclose expressly a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses;

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface a storage capacity

Art Unit: 2185

of the first memory which have been allocated for said user are transmitted to said user interface.

Voigt discloses a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses (col. 6, lines 13-16; col. 7, lines 30-31; and Fig. 2, element 56);

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface a storage capacity of the first memory which have been allocated for said user are transmitted to said user interface (col. 6, lines 13-17; col. 7, lines 5-9 and 30-36; Fig. 4, elements 90, 104, and 106). It should be noted that “as the administrator moves the sliding bar” acts as a “transmission request”.

Blumenau and Voigt are analogous art because they are from the same field of endeavor, that being storage systems that use logical storage units (LUNs) with graphical user interfaces (GUIs).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Voigt’s LUN cache storage capacity indicator and GUI with Blumenau’s cached storage subsystem and GUI.

The motivation for doing so would have been because in a system with fixed physical capacity, it would be beneficial to determine how much usable capacity can be afforded simultaneously for each logical unit type, given the diversity of consumption rates among the various types (Voigt, col. 3, lines 15-19).

Therefore, it would have been obvious to combine Blumenau and Voigt for the benefit of obtaining the invention as specified in claim 1.

16. As per claims 2 and 5, Blumenau discloses information on management of the storage resources includes:

first correlation between the physical disk drive and a data amount which can be stored in the first memory among the data stored in the physical disk drive (col. 8, lines 56-62); It should be noted that when taking the broadest interpretation of the claim language it is clear that the limitations of the claim do not identify what “correlation” specifically entails or the size of the “data amount”. Blumenau discloses reading data from the storage devices and writing the data (amount not specified, but nonetheless still a discrete amount of data) back to cache memory, thus disclosing a correlation between the storage devices and cache memory.

and information representing a second correlation between the first correlation and the communication port (col. 8, lines 62-65). Again, it should be noted that when taking the broadest interpretation of the claim language it is clear that the limitations of the claim do not identify what “correlation” specifically entails. Blumenau discloses that the data used in the “first correlation” (see citation directly above) is written to the cache memory by the port adapters (which contain at least two ports, see col. 9, lines 54-55), thus disclosing a correlation between the first correlation and the communication port.

17. As per claims 3 and 6, Blumenau discloses physical disk drives include a plurality of hard disk drives constituting a RAID (col. 9, lines 16-19).

18. As per claim 4, Blumenau discloses a storage control apparatus comprising: a data I/O control unit which has a plurality of communication ports that can be communicatively connected with any of a plurality of information processing apparatuses (col. 8, lines 24-28, 36-37, and 40-41; col. 9, lines 50-57; Fig. 1, elements 20, 21, 22-25, 27, and 35-36; and Fig. 2, elements 41-44), is communicatively connected to a plurality of physical disk drives for storing data (col. 8, lines 24-35, 36-37, and 41-44; and Fig. 1, elements 20, 26, 28-31, and 37-38), receives a data I/O request for data stored in the physical disk drives from the information processing apparatuses via the communication ports (col. 8, lines 48-49), and performs data read/write from/to the physical disk drives in accordance with the received data I/O request (col. 8, lines 56-60); It should be noted that “cached storage subsystem” is analogous to “storage control apparatus”, “storage controller” is analogous to “data I/O control unit”, and “hosts” are analogous to “information processing apparatuses”.

a first memory storing a data which is read/written among the data stored in the physical disk drives (col. 8, lines 36-37, 48-54, and 60-65; and Fig. 1, element 32); and  
a second memory storing information on management of storage resources including the communication ports and the physical disk drives (col. 27, lines 23-33 and Fig. 25, element 282); It should be noted that “virtual ports” are analogous to “communication ports”. It should also be noted that the logical storage volumes directly correspond to the storage devices (i.e. physical disk drives), see col. 8, lines 28-29.  
said method comprising the steps of:

receiving a transmission request of the information on management of the storage resource from a user via a user interface (col. 30, lines 59-62). It should be noted that “clicking on it with a pointing device” is analogous to “transmission request” and “system administrator” is analogous to “user”.

and in response to said receiving step, transmitting an identifier of the communication port and an identifier of the physical disk drive (col. 30, line 62 – col. 31, line 2 and Fig. 30, elements 346 and 347). Also, see citation note directly above regarding logical storage volumes.

Blumenau does not disclose expressly a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses;

in response to said receiving step, transmitting a storage capacity of the first memory which have been allocated for said user to said user interface.

Voigt discloses a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses (col. 6, lines 13-16; col. 7, lines 30-31; and Fig. 2, element 56);

in response to said receiving step, transmitting a storage capacity of the first memory which have been allocated for said user to said user interface (col. 6, lines 13-17; col. 7, lines 5-9 and 30-36; Fig. 4, elements 90, 104, and 106). It should be noted that “as the administrator moves the sliding bar” acts as a “transmission request”.

19. As per claim 7, Blumenau discloses a storage control apparatus comprising:

a channel control unit which has a plurality of communication ports that can be communicatively connected with any of a plurality of information processing apparatuses and receives a data I/O request for data stored in physical disk drives including a plurality of hard disk drives constituting an RAID (col. 8, lines 24-28, 36-37, 40-41, and 48-49; col. 9, lines 16-19 and 50-57; Fig. 1, elements 20, 21, 22-25, 27, and 35-36; and Fig. 2, elements 41-44); It should be noted that "cached storage subsystem" is analogous to "storage control apparatus", "port adapter" is analogous to "channel control unit", and "hosts" are analogous to "information processing apparatuses".

a disk control unit which is communicatively connected to the physical disk drives and performs data read/write from/to the physical disk drives according to the data I/O request (col. 8, lines 24-35, 36-37, 41-44, 56-60; and Fig. 1, elements 20, 26, 28-31, and 37-38); It should be noted that "storage adapter" is analogous to "disk control unit".

a first memory storing a data which is read/written among the data stored in the physical disk drives (col. 8, lines 36-37, 48-54, and 60-65; and Fig. 1, element 32); and

a second memory storing information on management of storage resources including the communication ports and the physical disk drives (col. 27, lines 23-33 and Fig. 25, element 282); It should be noted that "virtual ports" are analogous to "communication ports". It should also be noted that the logical storage volumes directly correspond to the storage devices (i.e. physical disk drives), see col. 8, lines 28-29.

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface, an identifier of the communication port and an identifier of the physical disk drive are transmitted to said

user interface (col. 30, line 59 – col. 31, line 2 and Fig. 30, elements 346 and 347). It should be noted that “clicking on it with a pointing device” is analogous to “transmission request” and “system administrator” is analogous to “user”. Also, see citation note directly above regarding logical storage volumes.

Blumenau does not disclose expressly a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses;

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface a storage capacity of the first memory which have been allocated for said user are transmitted to said user interface.

Voigt discloses a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses (col. 6, lines 13-16; col. 7, lines 30-31; and Fig. 2, element 56);

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface a storage capacity of the first memory which have been allocated for said user are transmitted to said user interface (col. 6, lines 13-17; col. 7, lines 5-9 and 30-36; Fig. 4, elements 90, 104, and 106). It should be noted that “as the administrator moves the sliding bar” acts as a “transmission request”.

**RELEVANT ART CITED BY THE EXAMINER**

The following prior art made of record and not relied upon is cited to establish the level of skill in Applicant's art and those arts considered reasonably pertinent to Applicant's disclosure. See MPEP 707.05(e).

The following reference discloses a storage area network (SAN) comprised of a RAID array.

**U.S. Patent Application Publication Number**

2003/0093501

**Conclusion**

**STATUS OF CLAIMS IN THE APPLICATION**

The following is a summary of the treatment and status of all claims in the application as recommended by MPEP 707.70(i):

**CLAIMS REJECTED IN THE APPLICATION**

Per the instant office action, claims 1-7 have received a first action on the merits and are subject of a first action non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-1077. The examiner can normally be reached on M-F 8:30-5.

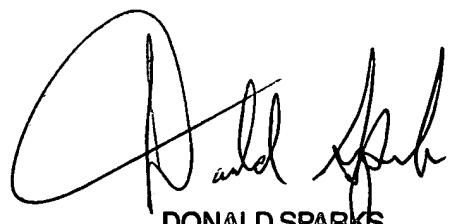
Art Unit: 2185

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arpan Savla  
Assistant Examiner  
Art Unit 2185  
January 12, 2006



DONALD SPARKS  
SUPERVISORY PATENT EXAMINER